

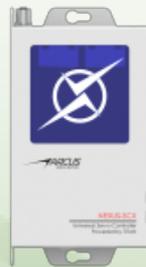


Dynetics

DYNAMIC IN MECHATRONICS

Motor-Driver/controller IC's, boards & Modules

1-2324



Introduction:

Dynerics- dynamic in mechatronics

Dynerics, founded in 1994, with offices in Germany and the Netherlands assists engineers across Europe in selecting the best suitable motor for their mechatronic assignment.

Dynerics represents leading manufacturers for rotating or linear functions with various technologies: Our motors are available in different technologies, related specs, and with many features and options such as a gearhead, encoder, but can also be modified to suit your needs

- Rotating: Brushed-; brushless, stepper-, Servo-, piezo, synchronous-, torque-motors
- Linear: high precision lead/ball screws; linear shaft motors, stages, motors with integrated high precision lead screw an/or intelligence (driver, sensors, etc) .

Many of our products can be "customized", like with double or modified shafts, encoders, altered windings, fitted with connectors per customer request. See also our electronic options (integrated or external) to drive the motor optimal at the most efficient way.

Equipment cooling:

Dynerics supports engineers in the selection of a suitable axial fans or radial blowers for your application. We represents a broad range of fans for an AC- or DC- power supply. The fans combine long life with high reliability. See for instance the L10 curves of selected fans showing 100.000 hrs at 20° C and 40.000 hrs at 60°C . Technologies can be combined with ball- or sleeve-bearing. Thanks to our close contacts with the engineering departments of the supplier we are involved with their continuous development of efficient and intelligent designs, suitable in a wide variety of applications.

Contact us also for customer specific solutions, like humidity protection, specific wirelength, connector, etc.) Dynerics helps economizing your design by offering solutions with optimum price-performance ratio.

logistics and services:

our logistic centre is located in The Netherlands:

“not only perfect for a European Distribution Center, but also as part of a global supply chain”
a logistic/warehouse solution in The Netherlands for various reasons:

- Central location within the European market / Gateway to Europe and worldwide.
- Excellent sea- and airport facilities, and distribution infrastructure with Main ports Schiphol Airport and Rotterdam port
- Efficient Cargo communication
- Close co-operation between carriers, customs, handling agents, forwarders and other parties involved
- Able to interface late cut-off times and short lead times
- International orientation
- Optimising the supply chain management,
- Maximizes fab utilizations
- Matches inventory levels with the customer’s demand
- Drives towards the best possible internal cycle time and schedule performance
- Multilingual capabilities

For more details, please visit our website:
www.dynerics.eu

Chip Level

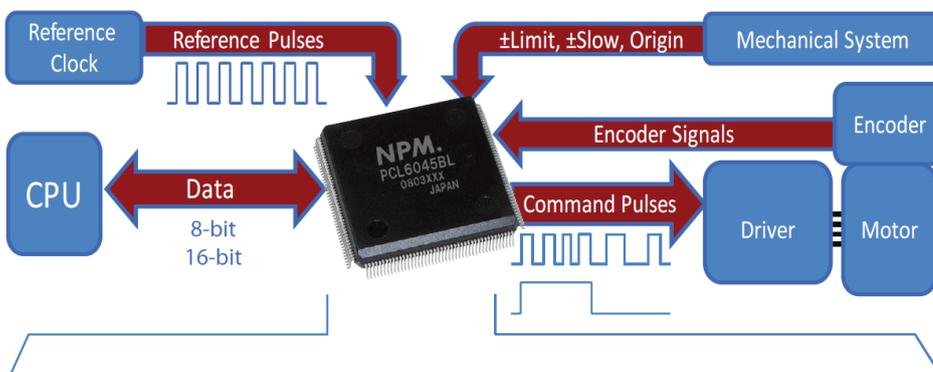
PCL6000 Series

The PCL6000 series features an arsenal of advanced functions that enable the user to easily configure even the most complicated motion control systems. This pulse generator ASIC is designed to contend with almost every impediment that could arise in complex motion systems.

The PCL6000 Series is the world's most advanced pulse generator from the world's leading manufacturer of motion control ASICs

Features:

- Out-of-Step detection
- Pre-buffering for continuous motion
- Linear and circular interpolation
- Anti-jerk drive correction
- Fully customizable Linear and S-curve acceleration/deceleration
- Backlash/Slip correction
- Vibration reduction
- Built-in homing routines
- Programmable soft limits
- On-the-fly override of speed or target position



Item	Description
Available Configurations	2 or 4 axis
Max Output Speed	PCL6025B/6045BL: 6.5 Mpps (with 19.6608 MHz reference clock) PCL6046: 10 Mpps (with 30 MHz reference clock)
Position Range per Axis	PCL6025B/6045BL: -134,217,728 to +134,217,727 (28-bit) PCL6046: -2,147,483,648 to +2,147,483,647 (32-bit)
Speed Range per Axis	1 to 65,535 (16-bits)
Acceleration Rate Range per Axis	1 to 65,535 (16-bits)
Deceleration Rate Range per Axis	1 to 65,535 (16-bits)
Mechanical Sensor Input per Axis	ORG, +EL, -EL, SD
Servomotor I/F per Axis	INP, ERC, ALM servomotor inputs
Encoder Input Max Frequency	1 count per reference clock cycle with filter, 1 count per 3 reference clock cycles
Typical operations	- Continuous operation - Positioning operation - Continuous operation using a \pm DR switch - Origin return operation - Timer operation - Continuous operation using a pulsar input
Typical functions	- Immediate stop and decelerating stop - Speed change - External start and external stop function - Idling pulse output function - Continuous circular and linear interpolation
Number of Registers for Speed Setting per Axis	3 (FL, FH, FA)
CPU Interface	8-bit, 16-bit
Power Supply	PCL6025B: 3.0 to 3.6 V and 4.5 to 5.5 V PCL6045BL/PCL6046: 3.0 to 3.6 V
Package	PCL6025B: 128-pin QFP (mold section :20.0× 14.0 mm) PCL6045BL: 176-pin QFP (mold section :24.0× 24.0 mm) PCL6046: 208-pin BGA (mold section :12.0× 12.0 mm)
Chip design	CMOS (Complementary Metal-Oxide Semiconductor)

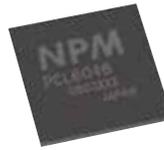
Advanced Motion Controllers



PCL6025B (2-axis)



PCL6045BL (4-axis)



PCL6046 (4-axis)

Advanced functions in this series include linear/circular interpolation, overriding operating pulse rate and target position during operation, operation correction, backlash correction, suppression of vibration at cessation, programmed soft limit, direct input of operating switch, diversified origin return sequences, mechanical signal input and servomotor interface. These functions enable the user to easily configure a complicated motion control system.

High Performance Servo/Stepper Controllers



PCL6113 (1-axis)



PCL6123 (2-axis)



PCL6143 (4-axis)

Because these chips have built-in preregisters (one stage), two up/down counters, per axis comparators, linear interpolation function, and servomotor interface, they can serve general motion control applications. This series is recommended for customers who need increased operational control that cannot be achieved with the PCD series. The maximum output pulse rate of 15 Mpps makes these chips compatible with high-resolution linear motors. There are also evaluation boards available that have the ability to reduce the number of development steps.



PCL6114 (1-axis)



PCL6124 (2-axis)



PCL6144 (4-axis)

This series has all the same features as the PCL61x3 series, but with available 8-bit and 16-bit data buses, among other improvements.

Miniature Servo/Stepper Controller with SPI



The first of its kind, this miniature package (mold measuring only 7x7mm) adopts a four-wire serial bus that enables downsizing of the board. It can output two-phase stepping motor excitation sequence and is equipped with a servomotor interface. The PCD2112 can control both stepper motors and servomotors.

Selection guide

	PCL6046	PCL6045BL	PCL6025B	PCL6113 PCL6123 PCL6143	PCL6114 PCL6124 PCL6144	PCD2112	PCD4611A PCD4621A PCD4641A
KEY SPECIFICATIONS							
Max. Output Frequency (pps)	6,553,500	6,553,500	6,553,500	9,829,800	9,829,800	2,457,300	2,457,300
Number of Axes	4	4	2	6113: 1 6123: 2 6143: 4	6114: 1 6124: 2 6144: 4	1	4611A: 1 4621A: 2 4641A: 4
Motor Types:							
Stepper Motors	Y	Y	Y	Y	Y	Y	Y
Servo Motors	Y	Y	Y	Y	Y	Y	N
Package Type	208-pin BGA	176-pin QFP	128-pin QFP	6113: 80-pin QFP 6123: 128-pin QFP 6143: 176-pin QFP	6114: 80-pin QFP 6124: 128-pin QFP 6144: 176-pin QFP	48-pin QFP	4611A: 48-pin QFP 4621A: 64-pin QFP 4641A: 100-pin QFP
CPU Interface:							
8-bit Parallel	Y	Y	Y	Y	Y	N	Y
16-bit Parallel	Y	Y	Y	Y	Y	N	N
SPI Serial	N	N	N	N	N	Y	Y
Stand Alone Operation	N	N	N	N	N	Y	N
Programming Style:							
Direct Access to Registers	Y	N	N	N	Y	Y (Serial)	N
Indirect Access to Registers	Y	Y	Y	Y	Y (Parallel)	N	Y
Stand Alone with EEPROM	N	N	N	N	N	Y	N
KEY FUNCTIONS							
Operation Types:							
Built-in Homing	Y (13 types)	Y (13 types)	Y (13 types)	Y (2 types)	Y (2 types)	Y (3 types)	Y (3 types)
Continuous Operation	Y	Y	Y	Y	Y	Y	Y
External Encoder/Pulsar Operation	Y	Y	Y	Y	Y	Y	N
External Position Override	Y	Y	Y	Y	Y	N	N
External Switch Operation	Y (Jog and Position)	Y (Jog and Position)	Y (Jog and Position)	N			
Positioning Operation	Y	Y	Y	Y	Y	Y	Y
External Simultaneous Start	Y	Y	Y	Y	Y	Y	Y
External Simultaneous Stop	Y	Y	Y	Y	Y	Y	Y
Timer Operation	Y	Y	Y	Y	Y	Y	Y
Interpolation:							
Linear	Y	Y	Y	6113: N 6123: Y 6143: Y	6114: N 6124: Y 6144: Y	N	N
Circular	Y	Y	Y	N	N	N	N
Spiral (Conical Cutting)	Y	Y	N	N	N	N	N
Continuous	Y	Y	Y	6113: N 6123: Y 6143: Y	6114: N 6124: Y 6144: Y	N	N
Acceleration/Deceleration:							
Linear Accel/Decel	Y	Y	Y	Y	Y	Y	Y
S-Curve Accel/Decel	Y	Y	Y	Y	Y	Y	Y
Modified S-Curve Accel/Decel	Y	Y	Y	Y	Y	Y	N
Accel/Decel Can Be Set Independently	Y	Y	Y	Y	Y	Y	N
Rampdown Setting Method	Automatic or Manual	Automatic or Manual	Automatic or Manual	Automatic or Manual	Automatic or Manual	Automatic or Manual	Automatic or Manual

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Selection guide

	PCL6046	PCL6045BL	PCL6025B	PCL6113 PCL6123 PCL6143	PCL6114 PCL6124 PCL6144	PCD2112	PCD4611A PCD4621A PCD4641A
MAJOR EXTRA FUNCTIONS							
Simultaneous Start Pin	Y	Y	Y	Y	Y	Y	Y
Simultaneous Stop Pin	Y	Y	Y	Y	Y	Y	Y
Simultaneous Slow Down Pin	N	N	N	Y	Y	N	N
Synchronous Starting	Y	Y	Y	Y	Y	N	N
On-the-Fly Speed Change	Y	Y	Y	Y	Y	Y	Y
On-the-Fly Target Change	Y (2 types)	Y (2 types)	Y (2 types)	Y (2 types)	Y (2 types)	N	N
Idling Pulse Output	Y	Y	Y	N	N	N	Y
Triangle Drive Correction	Y	Y	Y	Y	Y	Y	N
Pre-Register (Look Ahead):	Y (2 layer)	Y (2 layer)	Y (2 layer)	Y (1 layer)	Y (1 layer)	N	N
Comparator Pre-Register	Y	Y	Y	N	N	N	N
Operation Pre-Register	Y	Y	Y	Y	Y	N	N
Vibration Suppression	Y	Y	Y	N	N	N	N
Backlash Correction	Y	Y	Y	N	N	N	N
Slip Correction	Y	Y	Y	N	N	N	N
Comparators:	Y (5)	Y (5)	Y (5)	Y (2)	Y (4)	N	N
Out of Step Correction	Y	Y	Y	N	N	N	N
Ring Count Function	Y	Y	Y	Y	Y	N	N
Software Limits	Y	Y	Y	N	Y	N	N
Synchronization Output	Y	Y	Y	N	N	N	N
Counters:							
Current Position Counter	Y	Y	Y	N	N	Y	Y
Deflection Counter	Y	Y	Y	N	N	N	N
General Purpose Counter	Y	Y	Y	Y	Y	N	N
Mechanical Position Counter	Y	Y	Y	N	N	N	N
INPUT/OUTPUT							
Excitation Sequencing Output:	N	N	N	N	N	Y	Y
Full Step	N	N	N	N	N	Y	Y
Half Step	N	N	N	N	N	Y	Y
Unipolar	N	N	N	N	N	Y	Y
Bipolar	N	N	N	N	N	Y	Y
Current Reduction Signal						Y	N
Pulse Output:							
CW/CCW	Y	Y	Y	Y	Y	Y	Y
Pulse and Direction	Y	Y	Y	Y	Y	Y	Y
90-Degree Phase Difference	Y	Y	Y	Y	Y	Y	N
Servomotor Interface:							
In Position	Y	Y	Y	Y	Y	Y	N
Error	Y	Y	Y	Y	Y	Y	N
Alarm	Y	Y	Y	Y	Y	N	N
Sensor Inputs:							
Home (ORG, EZ)	Y (ORG and EZ)	Y (ORG and EZ)	Y (ORG and EZ)	Y (ORG and EZ)	Y (ORG and EZ)	Y (ORG and EZ)	Y (ORG only)
End Limit(s)	Y (EL+, EL-)	Y (EL+, EL-)	Y (EL+, EL-)	Y (EL+, EL-)	Y (EL+, EL-)	Y (EL+, EL-)	Y (EL+, EL-)
Slow Down	Y (SD+, SD-)	Y	Y	Y	Y	Y	Y (SD+, SD-)

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Selection guide

	PCL6046	PCL6045BL	PCL6025B	PCL6113 PCL6123 PCL6143	PCL6114 PCL6124 PCL6144	PCD2112	PCD4611A PCD4621A PCD4641A
General I/O	Y (up to 8 per axis)	Y (up to 8 per axis; 16 if Serial I/F)	Y (2 I/O & 2O)	Y (up to 4 per axis)			
Emergency Stop Input	Y	Y	Y	Y	Y	Y	N
Interrupt Output	Y	Y	Y	Y	Y	N	Y
Encoder Input:	Y	Y	Y	Y	Y	Y	N
Encoder Input (up to 4x multiplication)	Y	Y	Y	Y	Y	Y	N
Pulser Input	Y	Y	Y	Y	Y	Y	N
MAJOR SPECIFICATIONS							
Reference Clock Input (MHz)	19.6608	19.6608	19.6608	19.6608	19.6608	9.8304	4.9152
Speed Setting Range	16 bit	16 bit	16 bit	14 bit	14 bit	13 bit	13 bit
Accel/Decel Setting Range	16 bit	16 bit	16 bit	14 bit	16 bit	16 bit	16 bit
# of Speed Setting Registers	3 (FL, FH, FA)	3 (FL, FH, FA)	3 (FL, FH, FA)	2 (FL, FH)	2 (FL, FH)	3 (FL, FH1, FH2)	2 (FL, FH)
Positioning Pulse Setting Range	32 bit	28 bit	28 bit	28 bit	32 bit	28 bit	24 bit
Power Source	3.3V	3.3V	3.3V and 5V	3.3V	3.3V	3.3V	3.3V
5V Tolerant	Y	Y	Y	Y	Y	Y	Y
Package Size (mm)	12x12	24x24	20x14	6113: 12x12 6123: 20x14 6143L: 24x24	6114: 12x12 6124: 14x14 6144: 24x24	7x7	4611A: 7x7 4621A: 10x10 4641A: ????

Notes on Specifications

Number of controllable axes	Number of axes a single chip can control
Reference clock	Frequency of the clock, which is programmed into the pulse generator. A frequency other than the standard can be entered, but the output pulse rate may be lower than decimal point.
Maximum output pulse rate	Maximum rate at which the chip can output pulses
Number of pulse rate setting registers	There are FL registers to which the starting pulse rate is written and FH registers to which the operating pulse rate is written. The operating pulse rate can be changed during the operation in progress by rewriting it
Number of pulse rate setting steps	Number of steps available for pulse rate setting. The more bits, the finer pulse rate possible
Pulse rate multiplication setting range	Output pulse rate is a product of the value of pulse rate register and of the multiplication setting
Acceleration rate setting range	Pulse rate slope at acceleration is set. Acceleration time can be calculated from the setting value.
Deceleration rate setting range	Pulse rate slope at deceleration is set. Deceleration time can be calculated from the setting value.
Number of positioning pulses setting range	Number of output pulses for positioning is set
CPU interface	Typical CPUs are stated in User's Manual
Ramping-down point setting range	Starting point of deceleration for positioning is set based on the number of remaining pulses

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www.dynerics.eu

2ndSight Technology is the world's first comprehensive, patented Motion Analytics Solution to meet numerous challenges facing the Automation and Manufacturing market.

TRUE EDGE REAL-TIME ANALYTICS

With the emergence of Industry 4.0, automation and robotics have greatly increased production efficiency and quality across all industries. This recent development produced an urgent need for an intelligent solution that can monitor motion systems in real-time, collect and analyze data, and make mission-critical decisions to prevent failure and downtime. Reliable predictive maintenance is what will complete truly smart factories of the future.

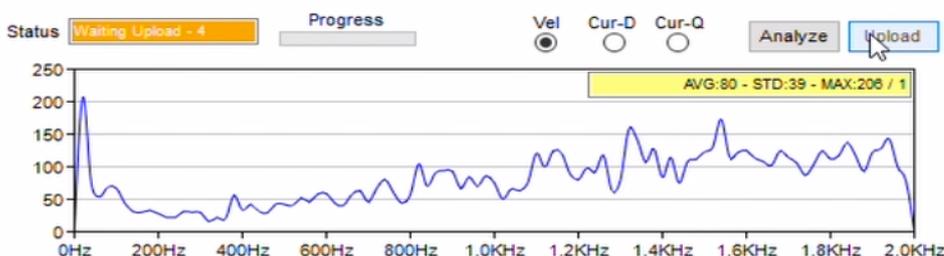
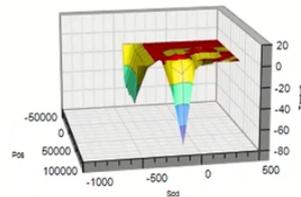
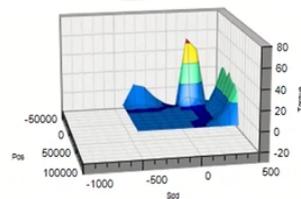
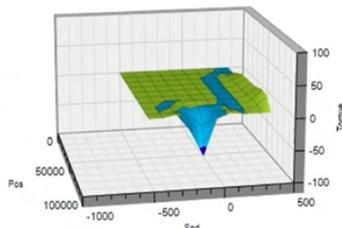
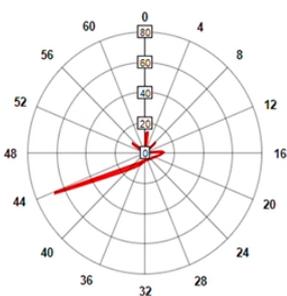
2ndSight is an innovative, comprehensive approach of applying Multi-dimensional Machine Learning methods, Analytical Physics, Statistics, and Regression techniques in quantifying and determining the overall health state of any motion system.

2ndSight is a real-time, data-driven, intelligent algorithm that is run on the Edge for increased efficiency and response. 2ndSight's compact and simplified data can easily be shared across networks and to the cloud, in contrast to burdensome, raw motion data.

2ndSight KEY COMPONENTS

- Multi-dimensional Modeling and Monitoring
- Friction Coefficient Calculation
- Velocity and Current Vibration Analysis
- Stress and Impact Tracking
- Power Usage Tracking

The 2ndSight algorithm is straightforward to implement since it uses the existing data that is already available on the servo motor controller. This means additional sensors are not required, and integration into the existing motion system takes minimal effort.



The TITAN Core Based Servo Controllers are single-axis servo core modules ideal for customized, cost-sensitive, and high-volume OEM applications. Single-board options allow for multi-axis solutions all equipped with TITAN technology and 2ndSight motion analytics.



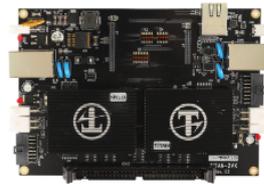
TITAN-CRX-8

Servo Motor Core Module



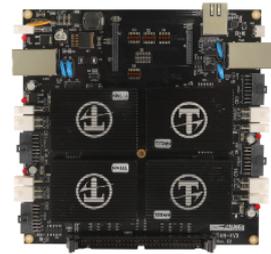
TITAN-1VX

1-Axis Micro Servo Controller



TITAN-2VX

2-Axis Servo Control Platform



TITAN-4VX

4-Axis Servo Control Platform

TITAN-CRX-8

Servo Core Module for Universal Motor Control

The TITAN-CRX-8 is a single-axis servo core module for customized, cost-sensitive, and high-volume OEM applications.

TITAN-1VX

Single Axis Micro Servo Controller

The TITAN-1VX is a compact single-axis servo controller that is based on the TITAN-CRX-8 servo core module.



*Fan Optional

Compact / Powerful

The CRX is small in size and yet packed with powerful functions and capabilities.

Universal / Easy

The CRX is easily able to control commonly used motors in the industry.

Advanced / Intuitive

The CRX has many advanced yet simple and intuitive motion functions.

Power Input

- 24 to 48 VDC for motor power
- 5 VDC for logic power

Digital and Analog IO

- 8 x TTL Digital Inputs
- 3 x TTL Digital Outputs
- 1 x Analog Input 0-5 volt range

Motor Supported

- 2 Phase Stepper Motors
- 3 Phase Rotary Brushless Motors
- 3 Phase Linear and Shaft Motors
- DC Brushed Motors
- Voice Coil Motors

Connector

- 50-Pin Header for I/O & Communication Connector
- 34-Pin Header for Motor and Power Connector
- 2 pin 1mm Connector for Fan Control
- 4 pin 1mm Connector for 2ndSight Communication

2ndSight Ready

- The CRX-8 is equipped with the 2ndSight motion edge analytics algorithm to predict and detect future failures to increase the uptime and reliability of the motion system.
- The CRX-8 comes with the dedicated 2ndSight communication port for uploading the motion analytics data to the factory server or to the cloud.

Communication

- 2 x UART Ports (UART/USB/RS485)
- 1 x SPI Communication Port (Ethernet/EtherCAT)
- 1 x 2ndSight Communication Port (RS485)
- Protocols Supported: TITAN-ASCII, MODBUS ASCII/RTU/TCP

Nippon Pulse Commander

Commander is a powerful, four-axis hybrid IC motion controller that bridges the gap between off-the-shelf and design-from-scratch controllers. Reduce development time and get your design to market faster, with Commander's advanced multi-axis functionality. Available options include the Commander core module, the Commander development board, or a kit with both that includes all the cabling and programming materials you'll need.

Commander is:

Secure
Flexible
Easy to use
Easily scalable from prototype to production
Cost-effective for high-volume applications

- Bridges the gap between off-the-shelf motion controllers and design-from-scratch controllers
- Faster path to market
- Fits a large range of applications
- Easily scalable from prototype to production with no software changes required
- Simple to use
- Cost-effective
- Based on Nippon Pulse's PCL6045BL motion control LSI, and an ARM Core processor



Motion Control:

- Linear interpolation (two to four axes)
- Arc/circular interpolation (any two axes)
- Helix/tangential interpolation (XYZ axes)
- Coordinated motion
- Continuous buffered motion (100 buffer registers)
- Trapezoidal or S-curve acceleration/deceleration
- Absolute or incremental positioning
- On-the-fly speed and target position change
- Closed-loop algorithm (StepNLoop)

Motor Interface:

- Max. pulse output rate 6.55Mpps
- Stepper motor interface (pulse, direction, enable outputs for XYZU axes)
- Servo motor interface (pulse, direction, enable, in-position, servo alarm and error clear outputs for XYZU axes)

Digital I/O:

- 4 designated high-speed inputs
- 4 designated high-speed outputs
- End limits and home inputs for each axis
- Simultaneous start input
- Emergency stop input
- 32 configurable I/O
- Latching inputs
- Synchronization pulse output

Analog I/O:

- Two 10-bit analog inputs
- Two PWM outputs
- Joystick operation with analog input (X-axis, Y-axis)

Communication:

- USB 2.0, HID compatible
- RS-485, ASCII commands
- Ethernet
- I²C bus for external IC interface (1 channel)
- SPI bus for external IC interface (2 channels)
- Can run in both PC-based and standalone modes

Programming:

- BASIC-like programming language (A-SCRIPT)
- Multi-threading program support
- Compile, read and write standalone programs
- IF/ELSE/WHILE loop control
- Subroutine support

Power

- +3.3VDC power input
- 5V tolerant

AD Series 2-Phase Stepper Drivers



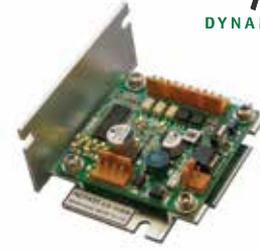
AD1111



AD1131



AD1231



AD1431

Feature	AD1111	AD1131	AD1231	AD1431
Control Method	Unipolar Constant Voltage	Unipolar Constant Voltage	Unipolar Constant Current	Bipolar Constant Current
Input Voltage	5V DC±5% (Logic) +5V to +30V DC (Motor)	5V DC±5% (Logic) +5V to +30V DC (Motor)	DC12 to 24V±10% Capacity: 3[A], with fuse.	DC12V -10% to DC24V +10% Capacity: 2A, with fuse.
Excitation Method	2 phase (FULL), 1-2 phase (HALF)	2 phase (FULL), 1-2 phase (HALF)	2 phase (FULL), 1-2 phase (HALF), W1-2 phase (1/4), 2W1-2 phase (1/8), 4W1-2 phase (1/16)	2 phase (FULL), 1-2 phase (HALF), W1-2 phase (1/4), 4W1-2 phase (1/16)
Motor Current	DC 5V to 30V 0.35 A per phase	DC 5V to 30V 1.1 A per phase	0.13A (MIN) to 2.0A (MAX) / phase Selectable by the rotary switch.	0.11A (MIN) to 1.20A (MAX) / phase Selectable by the rotary switch.
Auto Current Down Control (ACD)	N/A	N/A	Current down operation starts approximately 0.1s after pulse input stops and lowers the output current automatically. Selectable from 25%, 50% or 75% of the current by using switch.	Current down operation starts in approximately 0.1s after pulse input stops and lowers the output current automatically. Selectable from 25%, 50% or 75% of the current by using the switch.
Input Interface	TTL Input Low: 0 -0.5 V High: 1.9V – VCC All input pulse signals must last 10 microseconds or more. After commanding a change in direction, or Full/Half step mode, 10 microseconds must elapse before sending step signals.	TTL Input Low: 0 -0.5 V High: 1.9V – VCC All input pulse signals must last 10 microseconds or more. After commanding a change in direction, or Full/Half step mode, 10 microseconds must elapse before sending step signals.	Pins 1 to 4 of CN2: <ul style="list-style-type: none"> Photocoupler (Toshiba TLP112 or equivalent) Built-in 330 ohm resistor Forward voltage 1.42V (TYP) Recommended forward current IF:1 mA (Operation forward current IF:10 to 20mA) Maximum response frequency 160kpps (Input voltage 5V, duty rate 50%) Pins 5 to 8 of CN2: <ul style="list-style-type: none"> Photocoupler (Toshiba TLP281 or equivalent) Built-in 330 ohm resistor Forward voltage 1.15V (TYP) Recommended forward current IF:12mA (Operation forward current IF:5 to 50mA) 	Pins 1 to 4 of CN2: <ul style="list-style-type: none"> Photocoupler (Toshiba TLP109 or equivalent) Built-in 300 ohm resistor Forward voltage 1.64V (TYP) Recommended forward current IF:11mA (Operation forward current IF:10 to 20mA) Maximum response frequency 160kpps (Input voltage 5V, duty rate 50%) Pins 5 to 8 of CN2 : <ul style="list-style-type: none"> Photocoupler (Toshiba TLP281 or equivalent) Built-in 330 ohm resistor Forward voltage 1.15V (TYP) Recommended forward current IF:12mA (Operation forward current IF:5 to 50mA)
Output Interface	N/A	N/A	Pins 9 to 10 of CN2: <ul style="list-style-type: none"> Photocoupler (Toshiba TLP281 or equivalent) Recommended collector current Ic: 10mA (Saturation voltage between collector and emitter : 0.7V) 	Pins 9 to 10 of CN2: <ul style="list-style-type: none"> Photocoupler (Toshiba TLP281 or equivalent) Recommended collector current Ic: 10mA (Saturation voltage between collector and emitter : 0.7V)
CW/CCW Command Pulse	One of the following methods can be selected by SW1: 1. Two pulse method (CW/CCW) 2. One pulse method (CLK/DIR)	One of the following methods can be selected by SW1: 1. Two pulse method (CW/CCW) 2. One pulse method (CLK/DIR)	One of the following methods can be selected by the switch: 1. Two pulse method (CW/CCW) 2. One pulse method (CLK/DIR) Photocoupler ON: CCW Photocoupler OFF : CW	One of the following methods can be selected by the switch: 1. Two pulse method (CW/CCW) 2. One pulse method (CLK/DIR) Photocoupler ON: CCW Photocoupler OFF : CW
MOT/OFF Signals	Set with SW3: Logic High = Motor Energized Logic Low = Motor Off	Set with SW3: Logic High = Motor Energized Logic Low = Motor Off	Motor excitation signal Photocoupler ON : Excitation OFF Photocoupler OFF : Excitation ON	Motor excitation signal Photocoupler ON : Excitation OFF Photocoupler OFF : Excitation ON
ACD/OFF Signals	N/A	N/A	Auto current down signal Photocoupler ON : ACD_OFF Photocoupler OFF : ACD_ON	Auto current down signal Photocoupler ON : ACD_OFF Photocoupler OFF : ACD_ON
EORG Output Signals	N/A	N/A	Display signal of 2 phase excitation condition: Photocoupler ON : 2 phase excitation Photocoupler OFF: other than 2 phase excitation	Display signal of initial excitation condition: Photocoupler ON : Initial excitation Photocoupler OFF: other than initial excitation
Operating Temp.	0 to +50°C	0 to +50°C	0 to +50°C	0 to +50°C
Operating Humidity	0 to 80%RH (No condensation)	0 to 80%RH (No condensation)	0 to 80%RH (No condensation)	0 to 80%RH (No condensation)
Storage Temp.	-10 to +60°C	-10 to +60°C	-10 to +60°C	-10 to +60°C
Weight	20 g	20 g	43g (including heatsink)	35g (including heatsink)
Cooling System	Natural cooling	Natural cooling	Natural cooling	Natural cooling

SOMANET Circulo: Industry standard for Cobots and AGV

In round shape and hollow shaft, SOMANET Circulo is available in standard sizes with 70mm and 90 mm diameter. It can be mounted directly on hollow shaft motors, making the set a compact intelligent actuator – ideal for implementing intelligent embedded motor solutions where cable runs need to be embedded in a space-saving and safe way.

SOMANET Circulo is suitable for any permanent magnet synchronous motor (PMSM) or brushless DC (BLDC) motor up to 60V and 60 A rms.

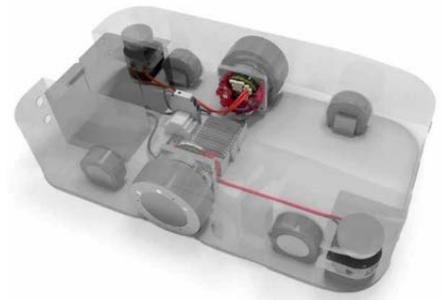
Supplier Synapticon innovative technology offers numerous advantages, such as error compensation for sensor noise, non-linearity and torque ripple, in addition to model-predictive field-oriented control to enable motion quality



The SOMANET Circulo series

The complete servo solution for robots and smart actuators that features:

- High speed EtherCAT Interface (DS402, up to 4kHz)
- >10 Certified Safety Functions (SIL3, PI-e)
- 2 x Integrated High Resolution Absolute Encoder (option)
- Integrated Motor Brake (option)
- Various sensor interfaces
- Optimal mechanical integration for most compact actuator designs
- 100% ready to go, no customization necessary
- Meets all relevant requirements (EMC, Safety)
- Easy to use commissioning and tuning tools
 - Tuning and control on the same cable :
Any number of SOMANET nodes can be connected to the PC running OBLAC Drive Tools using a single fieldbus cable. The firmware of each node can be installed or updated individually or simultaneously
 - Smart wizard guides.
The wizard guides the user through the setup and offers advanced troubleshooting. It recognizes configuration errors during configuration by systematic user interaction and logical analysis and indicates possible solutions. Finetuning electric motors becomes a breeze with a highly sophisticated and intuitive user interface offering a multitude of tuning functions and graphical evaluation options
 - Auto-tuning
Automatic motion controller tuning based system identification and dominant pole placement



high-performance, decentral servo drives,

SOMANET Circulo 7	Standard	CR7-48-24-ECNN
	Single Encoder position 1(inner)	CR7-48-24-ECAN
	Single Encoder Position 2 (outer)	CR7-48-24-ECBN
	Dual Encoder	CR7-48-24-ECDN
SOMANET Circulo 9	Standard	CR9-48-60-ECNN
	Single Encoder Position 1 (inner)	CR9-48-60-ECAN
	Single Encoder Position 2 (outer)	CR9-48-60-ECBN
	Dual Encoder	CR9-48-60-ECNN

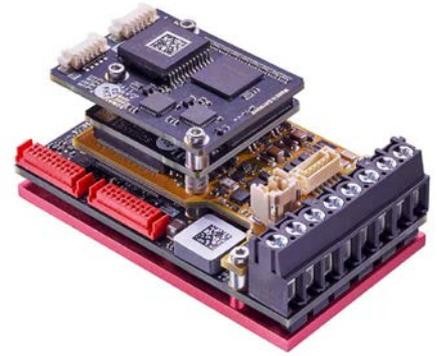


	Circulo 7		Circulo 9
Communication interface	EtherCAT, DS402, CoE, FoE, FSoE		
Rated supply voltage	DC 24-48 V		
Maximum voltage	DC 60 V		
Continuous phase current RMS	8 ARMS		20 ARMS
Maximum phase current RMS	24 ARMS		60 ARMS
Maximum efficiency	99%		
Integrated absolute encoder (option)	2 x 19 bit (1 x multi-turn)		2 x 20 bit (1 x multi-turn)
Supported motors	BLDC, PMSM		
Hardware protections	Overcurrent, overvoltage, undervoltage, overtemperature, PWM deadtime, PWM shoot through		
Sensors on-board	3 x I_phase, U_DC, t_MOSFET, t_core		
Encoder interface (ext.)	Port 1: SSI / BiSS-C		Port 2: ABZ / SSI / BiSS-C / Nikon
Brake output	Nominal 1 A @ 48 V, peak 4 A, pwm controlled		
GPIO	5x DIO(3.3/5 V), 1x DO(3.3/5 V), 1x DI(24 V) 1x Analog In Single Ended (0-10 V) 1x Analog In Differential (+5 V)		
Heatsink	Aluminum, anodized, precision machined		
Standard safety functions	STO / SBC according to SIL 3 PL-e		
Safe Motion Module (optional)	FSoE, STO, SBC, SS1/2, SOS, SMS, 4x SLS, Safe Process Data (position, velocity), 1 x safe analog input, 2 x safe digital inputs, 1 x safe digital output (OSSD)		
Integrated brake (optional)	Solenoid actuator for latching motor brake		
Compliance with standards	CISPR 11 Class B (EN 55011:2016)		
	IEC 61000-4-6:2013		
	IEC 61000-4-3:2020		
	IEC 61000-4-2:2008		
	IEC 61000-4-8:2009		
	IEC 61800-5-1:2007		
	IEC 60204-1:2016		
	IEC 61800-5-2:2017		
	ISO 13849-1:2015		
	IEC 61508:2010 parts 1-7		
	Compliance with European directives:		
	CE (EMC Directive 2014/30/EU)		
	CE (Machinery Directive 2006/42/EC)		
	Certificates:		
TÜV Süd Mark (Functional Safety)			

Options: OBLAC DRIVES BOX a physical machine that comes preinstalled with Linux OS and runs OBLAC Drives and the related services. It supports access over WiFi or local area network.

SOMANET Node series

is a family of ultra-compact, super-efficient and high-performance servo drives that support all PMSM / Synchronous AC / BLDC motors up to 60V and 100A / 66Arms and feature an EtherCAT interface with CiA DS 402 protocol.



SOMANET Node Safety is the first certified embedded servo drive that provides the following functional safety functions according to IEC 61800-5-2:

- STO Safe Torque Off
- SBC Safe Brake Control

	SOMANET Node 400	SOMANET Node 1000	SOMANET Node 2000
Rated supply voltage	12 - 48 / 60 V DC		
Maximum input current DC	9.6 A	24 A	48 A
Maximum Continuous Phase Current RMS	13.2 A	33 A	36 A
Maximum phase current RMS	13.2 A	33 A	66 A
Maximum Continuous Output Power	415 W	1,040 W	1,200 W
Maximum peak power output	415 W	1,040 W	2,080 W

Safety Integration level (SIL) according to IEC 61508:2010	SIL 3
Performance Level (PL) according to ISO 13849-1:2015	PL e cat. 3
Safe Failure Fraction (SFF)	99.99 %
Probability of dangerous failure per hour (PFH_d)	1.07E-10 /hour
Probability of dangerous failure on demand (PFD_avg)	9.41E-6
Common Cause Failure (CCF)	>65
Hardware Fault Tolerance (HFT)	1
Reaction time	10 ms
De-activation time	10 ms
Mean Time to dangerous Failure (MTTF_d)	3035 years (capped to 100 years)
Diagnostic coverage (DC_avg)	99%
HW-type	Type A
Mission time T_M	20 a



EtherCAT



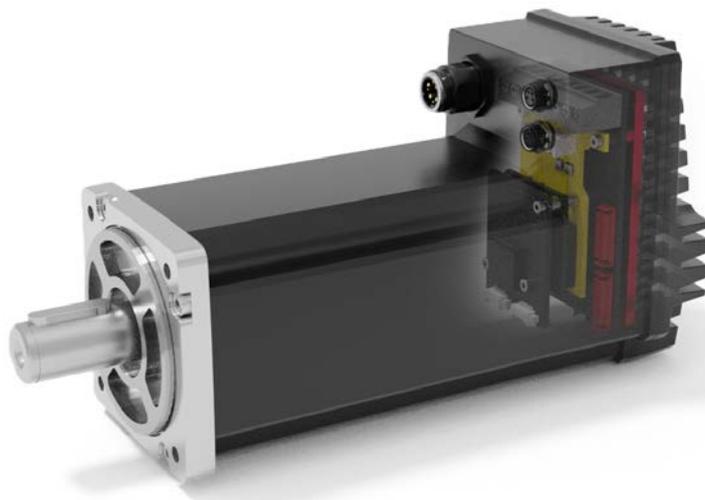
Option:

OBLAC Drive tool suite:

All functions of the SOMANET Node series can be configured and tuned with **OBLAC Tools**, a simple to use yet powerful commissioning and motion tuning tool suite. SOMANET Node Safety features TÜV-certified STO and SBC functions at SIL3 PL e level.

configuring and tuning a SOMANET Node to work with any PMSM / Synchronous AC / BLDC motor up to 60V and 100A / 66Arms by any manufacturer and any feedback sensor

Number of PMSM (BLDC) / brushed DC motors*	1 / 2*
Brake power output	PWM controllable (0-48 V)
Efficiency at rated power	98%
Position feedback sensor support (2 ports)	Hall, QEI, BiSS-C, SSI, Half-Duplex, A-Format
Analog inputs (auxiliary)	2 × single-ended 0-10 V, 2 × differential ±5 V (hardware-configurable upon request: 0-5 V, 0-10 V, 0-20 V, ±5 V, ±10 V)
Digital I/O	4 × GPIO / SPI** / I ² C** / UART
Notes	* Currently not supported by our standard software. Can be developed upon request, please contact our Sales team for details. ** Upon Request Please refer to our product documentation for more detailed specifications
Dimensions	70 x 40 x 27.7 mm
Weight	96 g (with Heatsink)
Compliance with standards:	CISPR 11 Class B (EN 55011:2016)
	CISPR 11 Class B
	IEC 61000-4-6:2013
	IEC 61000-4-3:2020
	IEC 61000-4-2:2008
	IEC 61000-4-8:2009
	IEC 61800-5-1:2007
	IEC 60204-1:2016
	IEC 61800-5-2:2017
	ISO 13849-1:2015
IEC 61508:2010 parts 1-7	
Compliance with European directives:	CE (EMC Directive 2014/30/EU)
	CE (Machinery Directive 2006/42/EC)
Certificates:	TÜV Süd Mark (Functional Safety)
	UL listed: Node 400, Node 1000 with soldered cables, Node 2000 with soldered cables
	UL recognized: Node 1000, Node 2000



ESH

The huge amount of pieces produced stands ESH at the top of reliability and cost effective. Firmware are easily customizable on standard production equipment. Firmware's customization allows to develop a stepper motor solution without the need of using external logic.

Designed for being well integrated this driver finds use in those applications characterized by a strong product innovation.

Main features

- Robustness
- Ultra Low Noise
- Microstep 1/128
- Encoder connections
- 3 digital input / 1 analog input
- 1 digital output
- Programs storable
- Logic Function PLC
- Removable connectors



The ESH-DC series can be powered by DC from 24 to 85V; Sizes: 85 x 35 x 118mm

The ESH-AC series can be powered in AC from 18 to 60V; Sixes: 85 x 35 x 165mm

		ESH 1-3	ESH 4	ESH 5
Electrical Conditions	Input voltage supply	18 ... 60 Vac 24 ... 85 Vdc	18 ... 60 Vac 24 ... 85 Vdc	18 ... 70 Vac 24 ... 100 Vdc
	Motor phase current	3 A 7 A	10 A	7 A
Operating Conditions	Ambient temperature	In use 0 ... 45 °C In storage -20 ... 70 °C		
	Humidity	In use 10 ... 70 % not condensing In storage 10 ... 90 % not condensing		
	Vibration resistance	0.5 G		
Functions	Steps resolution	200, 400, 800, 1600, 3200, 6400, 12800, 25600 1000, 2000, 4000, 10000, 20000		
	Protections	Extra current, Over voltage, Motor connection error, Over temperature, Fieldbus error, Eeprom error, etc...		
	Diagnostic	Display for diagnostic serial		
	Input signals	Steps, direction, enable/disable, encoder, analog speed reference etc...		
	Output signals	Encoder simulation, In position, Alarm etc...		



APSH

Designed for being well integrated, this driver finds use in those applications characterized by a strong product innovation.

The driver is user friendly and it has a complete range of unique and essential functions. APSH series is divided into six models covering the entire range of available motors.

Equipped with Fieldbus the driver can be integrated in the application, making available a large number of functions normally delegated to the axis control.

Main features

- Available FieldBus: Can Open, Profibus, Profinet, ModBUS
- UL certificate
- Ultra Low Noise
- High power diagnostic system
- Single power supply or with separate power and logic
- Encoder connections
- 6 digital input / 1 analog input
- 3 digital output
- Programs storable
- Logic Function PLC



The APSH-DC series can be powered by DC from 18 to 140V; sizes 104 x 36 x 165mm

The APSH-AC series can be powered in AC from 18 to 100V; sizes 104 x 62 x 165mm



		APSH 1-2-3	APSH 4	APSH 5
Electrical Conditions	Input voltage supply	18 ... 60 Vac 24 ... 85 Vdc	40 ... 100 Vac 50 ... 140 Vdc	40 ... 125 Vac 50 ... 180 Vdc
	Motor phase current	4 A 6 A 10 A	12 A	10 A
Operating Conditions	Ambient temperature	In use 0 ... 45 °C In storage -20 ... 70 °C		
	Humidity	In use 10 ... 70 % not condensing In storage 10 ... 90 % not condensing		
	Vibration resistance	0.5 G		
Functions	Steps resolution	200, 400, 800, 1600, 3200, 6400, 12800, 25600 1000, 2000, 4000, 10000, 20000		
	Fieldbus	CanOpen - Profibus - Modbus - SHS bus		
	Protections	Extra current, Over voltage, Motor connection error, Over temperature, Field bus error, Eeprom error, etc...		
	Communication interface	Serial communication with PC		
	Diagnostic	Display for diagnostic Display for Fieldbus state		
	Input signals	Steps, direction, enable/disable, encoder, analog speed reference etc...		
	Output signals	Encoder simulation, In position, Alarm etc...		

HT3

Ht3 has been designed for being well integrated, with easily accessible connectors on the front and with a powerful and intuitive diagnostic. All the parameters can be modified from the keypad and visualized on the frontal screen.

HT3 is an user friendly driver that gives to the user a range of unique and essential functions.

Main features

- Available FieldBus: CanOpen, ModBUS
- Completely configurable from the panel
- Connection with App SHSBlue
- Intuitive diagnostic
- Ultra low noise
- Open Firmware
- 6 digital input / 2 analog input
- 3 digital output
- Encoder feedback
- Stall detector
- USB Port
- Bluetooth connection
- Sizes: 55 x 25 x 155mm



		ESH 1-3	ESH 4	ESH 5
Electrical Conditions	Input voltage supply	18 ... 60 Vac 24 ... 85 Vdc	18 ... 60 Vac 24 ... 85 Vdc	18 ... 70 Vac 24 ... 100 Vdc
	Motor phase current	3 A 7 A	10 A	7 A
Operating Conditions	Ambient temperature	In use 0 ... 45 °C In storage -20 ... 70 °C		
	Humidity	In use 10 ... 70 % not condensing In storage 10 ... 90 % not condensing		
	Vibration resistance	0.5 G		
Functions	Steps resolution	200, 400, 800, 1600, 3200, 6400, 12800, 25600 1000, 2000, 4000, 10000, 20000		
	Protections	Extra current, Over voltage, Motor connection error, Over temperature, Fieldbus error, Eeprom error, etc...		
	Diagnostic	Display for diagnostic serial		
	Input signals	Steps, direction, enable/disable, encoder, analog speed reference etc...		
	Output signals	Encoder simulation, In position, Alarm etc...		

HT7

HT7 series is divided in three models covering the entire range of available motors.

The driver is completely configurable from the keypad and the frontal screen. Compatible with the most common Fieldbus it comes with characteristics that make it a leading product in the sector such as the low noise, a powerful diagnostic and an accurate encoder control.

Main features

- Available FieldBus: Can Open, Profibus, Profinet, etherCAT, Mod BUS
- Ultra Low Noise
- High power diagnostic system
- Single power supply or with separate power end logic
- Encoder connections
- 8 digital input
- 6 digital output
- 2 analog input
- Programs storable
- Logic Function PLC
- All connectors on the front panel
- Sizes: 48 x 170 x 124mm



		H 710	H 720	H 730	H 740	H 750
Electrical Conditions	Input voltage supply	18 ... 60 Vac 24 ... 90 Vdc			18 ... 90 Vac 24 ... 125 Vdc	
	Logic voltage supply	12 ... 30 Vdc			12 ... 30 Vdc	
	Motor phase current	4 A 7 A 12 A			12 A	
Operating Conditions	Ambient temperature	In use 0 ... 55 °C In storage -20 ... 70 °C				
	Humidity	In use 10 ... 70 % not condensing In storage 10 ... 90 % not condensing				
	Vibration resistance	0.5 G				
Functions	Steps resolution	200, 400, 800, 1600, 3200, 6400, 12800, 25600 500, 1000, 2000, 4000, 10000, 20000				
	Fieldbus	Power By Hilscher: CanOpen, EtherCAT, Profibus, Profinet, Modbus, Sercos, DeviceNet, PowerLink, CCLink ecc...				
	Protections	Over current, Under/over voltage, Motor phase disconnected, Over temperature, Fieldbus error, Stall detection error, Eeprom error, etc...				
	LED	Run, error, status				
	Display keyboard	Programming and diagnosing all parameters				
	Diagnostic	Display of all critical operating parameters such as: Operating temperature, input frequency etc... Status of digital and analog inputs and Fieldbus status				
	Input signals	Step in, Direction, Enable/disable, Encoder, Analog input for speed, etc...				
	Output signals	Encoder simulation, In position, Alarm etc...				

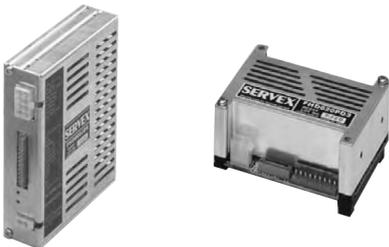
Nidec Servo Drivers

3- phase steppermotor driver

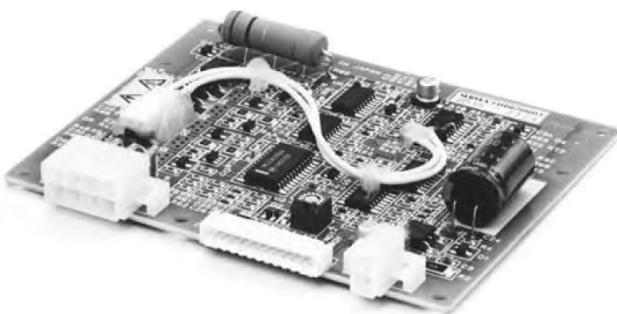
Applicable motors type	Model	Standard size	Power supply	OUTPUT current A	Step angle	Model
		mm				
		57 x 73 x 42	12-24V DC	1.0-2.0	1/1, 1/2, 1/4, 1/8	FTD3S2P22-01
		70 x 134 x 35	24V DC	1.5-3.0	1/1, 1/2, 1/4, 1/8	FTD3S3P17-01
			5V DC			

2-phase sSteppermotor driver

Applicable motors type	Model	Standard size	Power supply	OUTPUT current A	Step angle	Model
		mm				
Uni-poler		57x73x42	12-30V DC	0.33-2.00	1/1, 1/2, 1/4	FSD2U2P14-01
Uni-poler		57x73x56.5	12-30V DC	0.33-2.00	1/1, 1/2, 1/4	FSD2U3P13-01
Bi-poler		57x73x47.4	12-24V DC	0.44-2.00	1/1, 1/2, 1/4	FSD2B2P13-01



These drivers are also available in a "simple" version, without casing.



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 Tel: +31-(0)499-371007 | Fax: +31-(0)499-372008

Dynerics GmbH Kloostergasse 6 D-41334 Nettetal-Kaldenkirchen, Deutschland
 Tel : +49-(0)2157-128990 | Fax: +49-(0)2157-128999

Nexus Micro Servo Controllers / TITAN SVX Series | Universal Servo Motor Controllers

The TITAN Nexus Series features a closed loop servo pulse driver and standalone controller. Smaller in size yet powered by the advanced motion control features of TITAN, the Nexus Series is an excellent value for controlling any type of motor.

The TITAN SVX Series is the latest generation of standalone servo motor controllers with universal motor support and various communication options. TITAN Technology ensures powerful and efficient motion control coupled with unprecedented advances in reliable preventative maintenance using 2ndSight Edge Intelligence, our patented machine learning algorithm that monitors motor system health using existing servo drive variables.



TITAN-SVX-ETH

Ethernet, USB, RS485 Servo Controller



TITAN-SVX-ET2

Dual Ethernet, USB Servo Controller



TITAN-SVX-5.0

Bluetooth, Wi-Fi, USB Servo Controller



TITAN-NXS-SCX

USB, RS485 Micro Servo Motor Controller



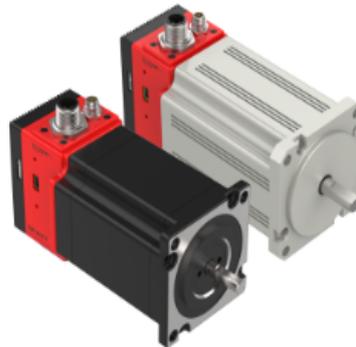
TITAN-NXS-SPX

USB Micro Servo Motor Pulse Driver

Integrated Servo Motors

These drives are also available as "all-in-one" solution:

The TITAN-IMX Series offers an all-in-one solution that integrates the motor, driver, encoder, and controller into one compact unit. Available in a range of motor sizes and types (stepper and servo), the TITAN-IMX motors are a comprehensive solution to simplify your motion control needs using the latest advances in servo technology.



For more information please visit our website: www.dynetics.eu

Box Level

FMAX-4X-2SD

Four-axis controller with built-in driver

The FMAX controller provides high performance motion control for applications that require 1, 2, 3 or 4 axes of movement, including robot and linear stage applications (such as microscopes and scanners).

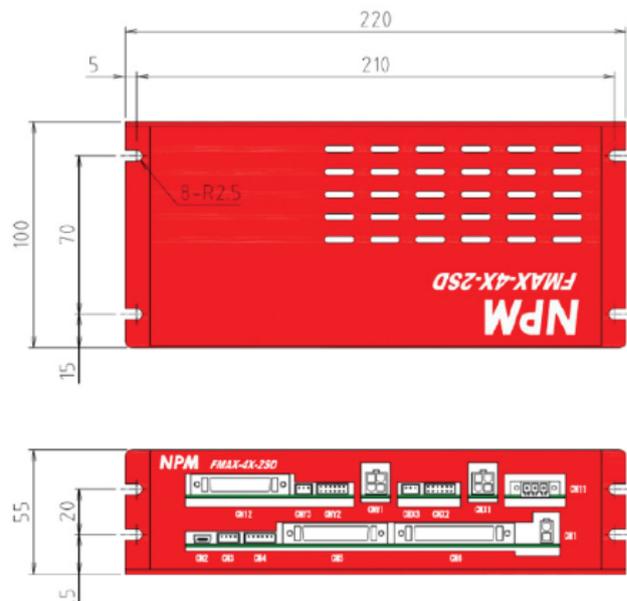
Features:

- Four-axis controller, with built-in servo drivers for X and Y axes to control rotary and linear brushless motors such as Nippon Pulse's Linear Shaft Motor.
- Z and U axes can control other motors — including DC brushless, linear brushless and stepping motors — by connecting additional drivers.
- Build a fully functioning 2-axis system with just a power supply, motor and cable!
- Can be controlled as standalone unit or with USB connection to PC.
- Can be controlled via joystick for jog operations.



- 13 types of homing mode
- On-the-fly parameter adjustment (speed and positioning)
- 2 to 4 axis linear interpolation
- 2 axis circular interpolation
- S-curve and trapezoidal profiles
- Absolute or incremental positioning
- Comparator function
- External pulsar input
- 12 inputs and 12 outputs as general purpose I/O signals

Specification	FMAX-4X-2SD
Size (mm)	220 (W) x 100 (D) x 55 (H)
Weight (g)	580
Controller Power Supply Voltage	DC24V ±10%, Max 1.0A
Driver Bus Voltage (VDC)	12 ~ 48
Driver Max. Continuous Power Output (W)	160
Number of Controllable Axes	4 (X, Y, Z, U)
Number of Built-in Drivers	2 (X and Y axes)
Serial Port	USB 2.0 mini B type (for controller) RS-232C (for driver) ¹
Maximum Output Frequency (MHz)	5 for Z and U axes 2 for X and Y axes ²
Analog Input	2 inputs (AI _{n1} , AI _{n2}) ³
Pulsar Input	PA, PB (each axis)
Comparator Output	4 (CMP _x , CMP _y , CMP _z , CMP _u)
Drive I/F Signal ⁴ (Output) Z and U Axes Only	Pulse Output (PLS, DIR) Excitation ON/OFF (SON) Clear Deviation Counter (ERC)
Drive I/F Signal ⁴ (Input) Z and U Axes Only	Encoder Signal (EA, EB, EZ) Alarm (ALM) In Position (INP) Servo Ready (RDY)
Mechanical Input Signal	+EL, -EL, ORG, SD (each axis) Emergency stop, external start
General Purpose Output	12 Photocoupler outputs
General Purpose Input	12 Photocoupler inputs
Corresponding Standard*	CE, RoHS (2011/65/EU), EMC Directive



Nippon Pulse PMX series controllers

This new box controller product line will allow NPA to better serve customers who prefer a more "turnkey" controller solution, or who choose to integrate PMX controllers into applications alongside other Nippon Pulse products.

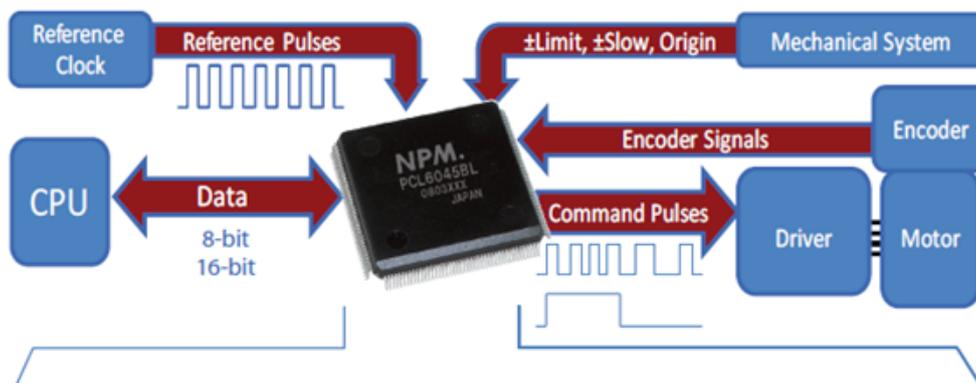


- PMX-2ED-SA : 2-Axis Motion Controller/Driver with USB/RS-485 Communication
- PMX-2EX-SA : 2-Axis Motion Controller with USB/RS-485 Communication
- PMX-4ET-SA : 4-Axis Motion Controller with Ethernet Communication
- PMX-4EX-BD : 4-Axis Stepper Motion Controller Board Level Version
- PMX-4EX-SA : 4-Axis Motion Controller with USB/RS-485 Communication

All the PMX controllers are based on NPM PCL 6000 series Motion Controllers(6.5 Mpps Output)

The PMX-2ED-SA can drive and control a.o. a 2 phase bipolar stepper motor, the 2-EX-SA is the controller only version of this box.

The other controllers can control through an intermediary driver various motors as long as the driver can take pulse and direction signals.



PMX-2ED-SA

Advanced 2-Axis Motion Controller/Driver with USB/ RS-485 Communication

- 2 Axis Advanced Motion Controller
- USB 2.0 and RS-485 Communication
- Built in X and Y axis microstep drivers
- (1.5 Amp/8 microstep/24 VDC)
- Trapezoidal or s-curve acceleration
- On-the-fly speed change
- XY linear coordinated motion
- Homing using Home and/or Index encoder channel
- Multi-task programming support
- Opto-isolated +Limit, -Limit, and Home inputs per axis
- Single-ended or differential quadrature encoder inputs per axis
- Opto-isolated Digital Inputs (8)
- Opto-isolated Digital Outputs (8)
- Analog inputs 10-bit resolution (2)
- Built-in joystick control for XY axes
- Built-in StepNLoop closed loop control algorithm
- BASIC-like standalone programming language



PMX-2EX-SA

Advanced 2-Axis Motion Controller with USB/RS-485 Communication

- 2 Axis Advanced Motion Controller
- USB 2.0 and RS-485 Communication
- 6M maximum pulse rate output
- Trapezoidal or s-curve acceleration
- On-the-fly speed change
- XY linear coordinated motion
- Homing using Home and/or Index encoder channel
- Opto-isolated +Limit, -Limit, and Home inputs per axis
- Pulse/Dir/Enable open collector outputs per axis
- Single-ended or differential quadrature encoder inputs per axis
- Opto-isolated Digital Inputs (8)
- Opto-isolated Digital Outputs (8)
- Analog Inputs 10-bit resolution (2)
- Built-in joystick control for XY axes
- Built-in StepNLoop closed loop control algorithm
- BASIC-like standalone programming language
- Multi-task programming support



PMX-4ET-SA

Advanced 4-Axis Motion Controller with Ethernet Communication

- 4 Axis Advanced Motion Controller
- 10 Mbps Ethernet Communication
- 6M maximum pulse rate output
- Trapezoidal or s-curve acceleration
- On-the-fly speed change
- Continuous linear coordinated buffered XYZ move
- XYZU linear coordinated motion
- XY circular and arc coordinated motion
- Homing using Home and/or Index encoder channel
- Pulse/Dir/Enable open collector outputs per axis
- Opto-isolated +Limit, -Limit, Home, and Alarm inputs per axis
- Single-ended or differential quadrature encoder inputs per axis
- Opto-isolated Digital Inputs (8)
- Opto-isolated Digital Outputs (8)
- High speed position capture inputs and sync outputs
- Built-in StepNLoop closed loop control algorithm
- BASIC-like standalone programming language
- Multi-task programming support



Advanced 4-Axis Stepper Motion Controller Board Level Version

PMX-4EX-BD is an advanced 4 axis stepper board level motion controller. Feature highlights include: encoder support (closed-loop position verification) and SD card interface.

Communication to the PMX-4EX-BD can be established over USB or RS-485. It is also possible to download a stand-alone program (via SD card only) to the device and have it run independent of a host.



- USB 2.0 communication
- RS-485 ASCII communication
 - 9600, 19200, 38400, 57600, 115200 bps
- Standalone programmable using A-SCRIPT
- Maximum pulse output rate of 6M PPS
- Trapezoidal or s-curve acceleration
- On-the-fly speed change
- XYZU linear coordinated motion
- Circular coordinated motion between any 2 axes
- Arc coordinated motion between any 2 axes
- XYZ Helix/Tangential coordinated motion
- Continuous linear coordinated buffered move for XYZ axes for smooth move control. Buffer size is 45.
- A/B/Z differential encoder inputs [Max frequency of 5 MHz]
 - StepNLoop closed loop control (position verification)
- A/B pulsar inputs [Max frequency of 5 MHz]
 - Control using manual pulse generator
- 1 x 10-bit analog input
- 2 x analog outputs
- Opto-isolated I/O
 - 8 x inputs [4 x high speed position capture latch input]
 - 4 x outputs [4 x synchronous output]
 - +Limit/-Limit/Home inputs per axis
- TTL I/O
 - 24 x configurable I/O
- Homing routines:
 - Home input only (high speed)
 - Home input only (high speed + low speed)
 - Limit only
 - Z-index encoder channel only
 - Home input + Z index encoder channel
- External start/stop signals for synchronization between multiple controllers

PMX-4EX-SA

Advanced 4-Axis Motion Controller with USB/RS-485 Communication

- 4 Axis Advanced Motion Controller
- USB 2.0 and RS-485 Communication
- 6M maximum pulse rate output
- Trapezoidal or s-curve acceleration
- On-the-fly speed change
- Continuous linear coordinated buffered XYZ move
- XYZU linear coordinated motion
- XY circular and arc coordinated motion
- Homing using Home and/or Index encoder channel
- Opto-isolated +Limit, -Limit, Home, and Alarm inputs per axis
- Pulse/Dir/Enable open collector outputs per axis
- Single-ended or differential quadrature encoder inputs per axis
- Opto-isolated Digital Inputs (8)
- Opto-isolated Digital Outputs (8)
- Analog inputs 10-bit resolution (8)
- Built-in joystick control for XYZU axes
- High speed position capture inputs and sync outputs
- Built-in StepNLoop closed loop control algorithm
- BASIC-like standalone programming language
- Multi-task programming support



Panasonic A5L Series

The AC Servo Motor & Driver, MINAS A5 series is the latest servo system that meets all demands from a variety of machines which require high speed, high precision and high performance or which require simplified settings.

Compared with the preceding A4 series, product of A5 series offers superior performance while requiring simple setup and adjustment by the user. Newly designed motors have wide range of outputs from 50 W to 15.0 kW, associated with 20-bit incremental encoder and reduced cogging torque. (Only for position control type have range of outputs from 50 W to 5.0 kW.)

They are compatible with 2 closed controls (serial communication type and A-/B-phase output type) and provided with various automatic adjusting functions such as real time auto tuning with many automatic setting parameters to make complex tuning easy. (Only for position control type do not conform to full-closed control.)

In addition to the functions of MINAS A5 series, MINAS A5II series adopted two-degree-of-freedom control system which enables faster and more precise adjustment.

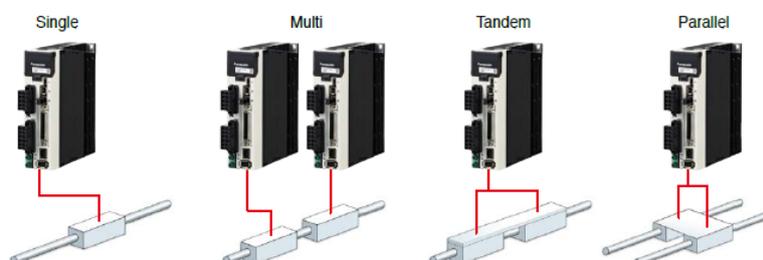
It also supports the new feature "fit gain" function of PANATERM, which provides an automatic gain adjustment in a simple and short time.

These motors assure higher stability with low stiffness machine and high-speed, high accurate operation with high stiffness machine. They can be used in combination with a wide variety of machines



The Panasonic A5L Series also works perfectly with the Nippon Pulse Linear Shaft Motor

Power Supply	Drive Part Number	Corresponding Nippon Pulse Motor	Motor Rated Current (Arms)	Motor max. current (Arms)
Single Phase (120V)	MADHT1105	SLP15, S080~S200	1.2	3.6
	MADHT1107	SLP25, S250, S320, S350, L250~L320	1.7	5.1
	MBDHT2110	S250X, S320X	2.5	7.5
	MCDHT3120	SLP35, S350Q, S427~S435	4.8	13.8
Single/3-phase (230V)	MADHT1505	SLP15, S080~S200	1.2	3.6
	MADHT1507	SLP25, S250, S320, S350, L250~L320	1.6	4.8
	MBDHT2510	S250X, S320X	2.6	7.8
	MCDHT3520	SLP35, S350Q, S427~S435	4.1	12.3
	MDDHT3530		5.9	16.9
	MDDHT5540	S500, S605	9.4	28.2
3-phase (230V)	MEDHT7364		13.4	40.2
	MFDHTA390		18.7	56.1
	MFDHTB3A2		33.0	84.8
	MGDHTC3B4		44.0	116.6
	MHDHTC3B4		66.1	167.2
3-phase (480V)	MDDHT2407		1.5	4.5
	MDDHT2412		2.9	8.7
	MDDHT3420		4.7	14.1
	MEDHT4430		6.7	19.7
	MFDHT5440		9.4	29.2
	MFDHTA464		16.5	42.4
	MGDHTB4A2		22.0	58.7
	MHDHTB4A2		33.1	63.7



Also known as variable frequency drives (VFD), variable speed drives (VSD), adjustable-speed drives or inverter drives also referred to as motor controls.

The portfolio includes AC, servo variable speed drives as well as power conversion technologies, for industrial applications which demand energy efficiency, such as fans, pumps and compressors. major product lines

Unidrive	M400 / M700 AC variable speed drives for industry
Digitax HD	M750 / M751 / M753 for high-dynamic applications, with high speed control loops, C200 / C300 Variable Speed AC drive for induction motors
Commander	F300 AC variable speed drives for fans, pumps & compressors
Powerdrive	AC drives for the elevator industry
Elevator	High dynamic pulse duty servo drives
Drives Digitax	Easy to use servo drives & motors
ST Digitax SF	a standalone controller
Digitax	
Indexer	



Commander

Plug-in options for advanced control; Dual Safe Torque Off (STO) (C300); Up to 180% overload for high torque applications On board PL; Easy motor pairing and performance control; Super-quick start-up Tap in 4 key parameters (the motor rated current, RPM, voltage and power factor).

Equipped with the latest energy saving; flexible connectivity with a wide range of industrial fieldbuses

- Commander C200: variable speed drives: 0.25 kW - 132 kW (0.33 hp to 200hp) 100 V; 200 V; 400 V
- Commander C300: same as C200 + dual STO)



Digitax HD Servo Drive Series

maximum servo performance in a minimum size package; 1.5 A – 16 A with 48 A peak; 200 V | 400 V; 0.25 kW - 7.5 kW; full servo control plus open loop permanent magnet motor and induction motor control across four functionality levels: EtherCAT, MCi machine control, Ethernet and the flexible Base servo drive; Drive width of only 40 mm; dissipates heat directly outside of the cabinet.

Digitax Unidrive

enables maximum machine throughput in every application, with every motor, from standard AC induction motors to dynamic linear motors and from hybrid pm-motors, to high performance servo-motors.

- M400 series: 0.25 kW – 132 kW; 115 V; 208 - 240 V; 380 - 480 V; 575 V; 690 V
- M700 series: 0.75 kW – 2.8 MW; 208-240 V ; 380-480 V; 575 V; 690 V



Digitax SF family:

- 0.05 kW - 2 kW ; 200 V

The solution for low power application requirements with pulse train or analogue interface and serial communication; available in several inertia levels; for applications requiring speed, precision and accuracy Highlights: Magnetic encoder technology; Versatile analogue or pulse train interface; Built-in keypad ; Standalone operation; PC-USB interface; Multiple motor inertia levels available

Digitax Indexer

a standalone controller or integrate with a wider automation system using fieldbus and I/O. Easy to use, point-to-point positioning

Available models: DST120X single phase; DST120X three phase; DST140X three phase;



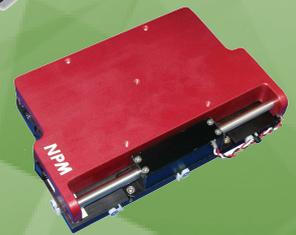
See also the sets we offer of driver with motor.



Nidec
All for dreams

stepper motors

Hybrid, PM, tin-can low vibration, low noise
Compact design up to 50 Nm, linearstep, 2 & 3-phase versions
0.6 ° -3.75 ° step angle, integrated driver electronics
Manufacturers: Nidec Servo, Shinano Kenshi, NPM, KSS



NPM

Stepper and BLDC motor controller / driver boards and modules

Single & Multi axes 2,3,4 & 5 phases unipolar, bipolar
Up to 4 axes, microstep, up to 8A. Various communication
Fieldbus (CANopen, MODBUS) Ethernet, RS485, USB
Manufacturers: Nidec Servo, SHS, NPM, Panasonic, Synapticon

Brushed motors and geared motors

Torque up to 35Nm
Manufacturers: Nidec Servo, Tsukasa, 3P

Brushless Motors and gears

Outside, or inside runners; Optionally with integrated driver electronics
Manufacturers: Nidec, Tsukasa, 3P, Mellor

Motors with ironless rotor and gearbox

Brushed, or brushless 0.4-46W torque to 20Nm planetary gear
Manufacturers: E-DriveSystem

Piëzomotoren

10 to 150 mm, up to 3Nm, noiseless, short response time integrated speed /
position torque sensors
Manufacturers: Tekceleo

Linear servo motors / Electric cylinders and stages

Ultra-precise, Dynamic, Stable.
Height reproducibility, compact direct drive. Maintenance and cogging free shaft
diameter from 4mm to 100mm stroke from 20mm to 4600mm captive / non-
captive. Top thrust force up to 10kN;
Manufacturer: NPM, KSS

AC geared motors

Shaded pole & EC motors
Motors up to 90W torque up to 30Nm
Manufacturer: Nidec Servo, Mellor, DKM

Fans and blowers

Reliable, Ball bearing / sleeve bearing
Lifetime up to 100,000 hours. Tested to VDE / UL / CSA IP54-65 versions
Manufacturer: Nidec Servo, Nidec, DyNETICS

Embedded IC's

One-chip stepper motor driver ICs, programmable pulse generators, integrated
homing, anti-feedback, S-curve. Reduces engine noise Linear spiral, helical / circular
interpolation
Manufacturer: Nippon Pulse

Linear Lead & Ball Screw Linear bearings & Guides

High accuracy, minimal friction, integr. Ball feedback, high rigidity, smooth running
Manufacturer: KSS



DKM

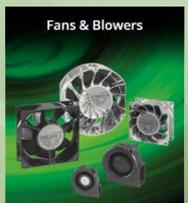
TEKCELEO
We Accelerate Innovation

System Drive



synapticon
INTEGRATED MOTION

TSUKASA



Mellor
MOTORS & GEARED MOTORS

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